

**Dover Municipal Landfill Superfund Site
Second Consent Decree for RD/RA**

Civil Action No. 1:92-cv-406-M

APPENDIX A

2004 Amended ROD

(Part 3 of 3)



CARYN DUNCAN
<CDUNCAN_CARYN@
msn.com>

08/11/2004 12:36 PM

To: Darryl Luce/R1/USEPA/US@EPA
cc:
Subject: comment on plan for Dover, NH landfill

<?xml:namespace prefix="v" /><?xml:namespace prefix="o" />
Mr. Luce,

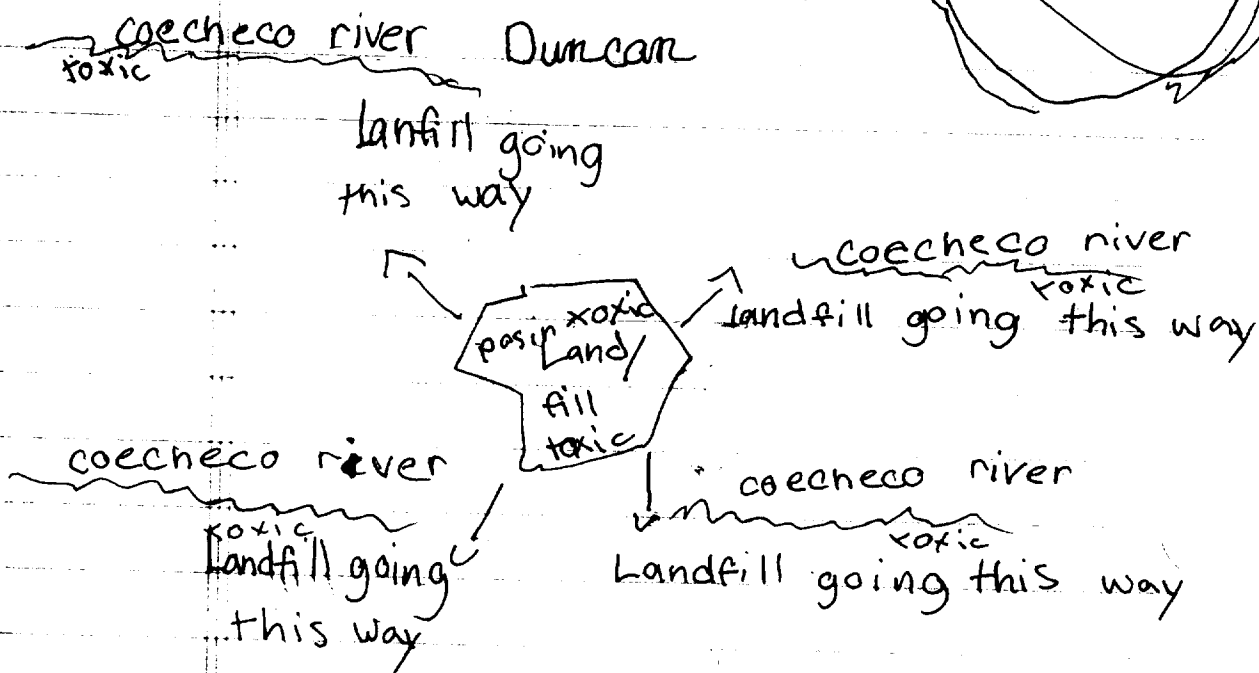
I would like to comment on the proposed EPA action plan for the Dover Municipal Landfill Superfund site on Tolend Road. I am concerned about the contaminated ground water that is flows toward the Cocheco River and the Bellamy Reservoir. I agree that there needs to be action taken to control this. However I feel that the action plan of the air-sparging trench system should not be used because of unknown fact of its effectiveness until it is completed and the reliability over a long term time span. I feel a plan needs to be implemented that will be effective upon completion without having to rely on a back up plan. I feel that this situation needs to be addressed immediately so that the flow of contaminants are stopped from leaching into the water.

Caryn Duncan
39 St. Thomas St.
Dover, NH 03820

Luce,
Dear, Mr. ~~Hammett~~

You didn't ^{give me} ~~quite~~ such a good answer. I ^w to my question didn't get it. why are changes 100 years. it can be a huge risk.

From
Katherine
Ann



PS. land fill is spaced around the coecheco river. toxic is going in to ground and ^{leading} to coecheco river.



Tom Fargo
<tomfargo@ttlc.net>

08/10/2004 04:12 PM

To: Darryl Luce/R1/USEPA/US@EPA
cc: "Peschel, Dean" <dean.peschel@ci.dover.nh.us>, Lorie Chase
<lorie.chase@unh.edu>
Subject: Dover Municipal Landfill

Darryl,

The letter attached below has also been sent through the mail. It is postmarked today, August 10, 2004. Please include my comments in the record regarding the Amended Proposed Plan for the Dover Municipal Landfill.

August 10, 2004

Mr. Darryl Luce
U.S. Environmental Protection Agency
1 Congress Street, Suite 1100 (HBO)
Boston, MA 02114

RE: Comments to the Amended Proposed Plan, Dover Municipal Landfill

Dear Mr. Luce:

The purpose of this letter is to document the questions and comments I provided regarding the above-referenced project, during the public hearing held on July 19, 2004 in the Dover City Hall Auditorium.

As I stated at the public hearing, I am a resident of Dover. I am also the Chairman of the Dover Conservation Commission; although the comments I provide herein do not reflect positions endorsed by the Commission. I have also participated in the Pre-Design Investigations of the Dover Municipal Landfill, during the early 1990's, as a Senior Staff Hydrogeologist for the consulting firm Caswell, Eichler & Hill, Inc. My familiarity with the landfill site stems from my involvement with field investigations (geophysical surveys, subsurface boring inspections, monitoring well installations and hydrologic testing) and data analysis (including the development and testing of the EPA-approved groundwater flow and contaminant transport numerical model).

Comment 1; RE: Efficacy and Maintenance of the Proposed Treatment Trench

My first comment on the amended proposed plan regards the long-term efficacy of the proposed treatment trench. The proposed air injection system will cause the formation of an iron precipitate, that will also contain arsenic, within the trench backfill. My concern is that this solid precipitate material will rapidly clog the interstitial spaces within the trench backfill. This could then lead to formation of air escape passageways within the treatment trench that would "pipe" the sparging air to the surface. Such piping of the sparging air would reduce the effectiveness of the groundwater treatment system. In order to maintain the capacity of the system to treat of the contaminated groundwater, the iron-arsenic precipitate in the trench will need to be removed periodically. Re-excavation of the trench to remove the precipitate and replace the backfill would be very costly and would also produce a large amount of potential RCRA hazardous waste. Acid flushing might be used to remove the precipitate in-situ, but the acid could mobilize a slug of

dissolved arsenic into the downgradient groundwater. At the June 21st public information meeting, I asked if bench scale tests have been performed to evaluate the rate of iron-arsenic precipitate formation relative to the available interstitial volume in the treatment trench and the effective life of the system. I suggest that even if the results of this analysis are favorable, the proposed treatment trench will essentially be filled with the iron-arsenic precipitate at the end of the remediation period. Once the artificial oxidizing conditions revert to ambient anoxic conditions, the arsenic in the trench will start to be remobilized and will provide a continuing source of contamination to downgradient groundwater and the Cochecho River, unless it is removed by re-excavation or acid flushing. The use of air sparging technology to remove arsenic from the contaminated groundwater is not like the removal and enhanced bioremediation of chlorinated and non-chlorinated organic compounds in the groundwater. The arsenic will remain in the ground, concentrated within the treatment trench backfill. It shouldn't be simply left in place.

Comment 2; RE: Convertibility of the Treatment Trench to a Groundwater Extraction System

The amended proposed plan, as described at the June 21st public information meeting, includes an alternative to convert the treatment trench to a groundwater extraction system, should the proposed air sparging system fail to meet treatment expectations. At the July 19th public hearing I cautioned that such a conversion might not be easily accomplished. The use of treatment trench technology is based on the remedial approach that the system will remove or enhance the destruction of specific contaminants of concern below their respective clean up level concentrations. The use of groundwater extraction technology (so-called pump and treat methods) is based on a remedial approach that is intended to hydraulically capture all groundwater flowing past the solid waste boundary. The Pre-Design Investigations, that I participated in, designed a landfill cap and groundwater extraction system that followed the hydraulic control approach as required by the 1991 Record of Decision (ROD).

My specific concerns, as expressed at the July 19th public hearing, regarded the variable vertical hydraulic gradients along the alignment proposed for the treatment trench. Based on data in the Pre-Design Investigation report, I know that along the southern boundary of the landfill the ambient hydraulic gradients are upward from the various levels of the upper interbedded zone to the upper sand zone. In fact in places the hydraulic head within the semi-confined upper interbedded zone is above the land surface. (This may influence the constructability of the treatment trench in this area.) Conversely, where the treatment trench is proposed along the northeastern boundary of the landfill, the vertical hydraulic gradients are downward. Unless the treatment trench is segmented, or separations are installed to limit the vertical and horizontal movement of groundwater within the trench, the system might not be converted to an effective groundwater extraction system. There may be areas along the solid waste boundary where hydraulic control can not be achieved. There might also be areas where preferential groundwater flow paths may develop within the trench allowing contaminated groundwater to "break out" into previously uncontaminated areas. The proposed treatment trench includes portions of the landfill perimeter where groundwater flow is parallel to the alignment of the trench. This might not be a significant problem in a contaminant-removal remedial approach, but it could compromise the alternative hydraulic control remedy.

The possibility of changing the remedial approach back to hydraulic control (pump and treat as required by the original 1991 ROD) also presents potential problems with the amount of pumping potentially necessary to control the source at the solid waste boundary. Without a cap to

limit precipitation recharge through the landfill, the converted treatment trench-groundwater extraction system would need to capture several times the approximate 26 gallons per minute of contaminated groundwater estimated in the design the 1991 ROD remedy. This could present problems regarding the treatment and discharge of the extracted groundwater. (One possible treatment option that didn't exist when the Pre-Design Investigation was completed in 1995 is the recently upgraded City of Rochester wastewater treatment plant. This plant currently accepts up to 70,000 gallons per day of pre-treated leachate from the nearby Waste Management landfill facility on Rochester Neck Road.)

Comment 3; RE: Odor and Noise Control Associated With the Amended Proposed Plan

The amended proposed plan, as described at the July 19th public hearing, does not include the collection and treatment of the air discharged from the treatment trench, unless contaminants of concern are present at concentrations above air discharge limits. If provisions are not made to collect and treat the gas emissions, I am concerned that nuisance odors will become a problem. I know from personal experience that the leachate from the Dover Municipal Landfill can produce offensive odors. The neighboring residential area already suffers with odor problems emanating from the nearby Waste Management, Inc. facility. Waste Management has recently promised the Rochester Planning Board that it is pursuing an aggressive program to address its odor problems. It would not be fair to the nearby residents to subject them to another source of offensive odors that could last for at least 30 years, as outlined in the amended proposed plan.

In addition to the odor issues, I also noted a potential problem with noise from the air pumps. The pumps are likely to operate 24 – 7 – 365. If the blowers are not properly insulated for sound, their noise (even if it's below hazardous levels) could be considered a public nuisance.

Comment 4; RE: Potential Excavation of Contaminated Sediment from the Cochecho River

Page 5 of the EPA's handout from the June 21st public information meeting states that: "Groundwater discharge to the Cochecho River does cause sediment concentration levels to exceed screening levels for an ecologic risk; therefore, further assessment and monitoring will be performed to clearly characterize any risk and, if necessary, **sediment will be excavated.**"

At the June 21st meeting, and again at the July 19th public hearing, I requested that if such excavation of the river bed sediment is to take place, that the NHDES permit process will be followed; and that in accordance with NHDES administrative rules, the Dover Conservation Commission will be allowed to review and comment on the dredging and restoration plan.

Comment 5; RE: Alternative Placement of Treatment Trench

During the July 19th public hearing, several people expressed their concern regarding the time that it will take to limit the current discharge of contaminants from the Eastern Plume to the Cochecho River. In a follow-up question I asked if an alternative placement of the treatment trench had been fully evaluated. I suggested that the proposed treatment trench could be repositioned to an alignment parallel to and along the southern side Tolend Road. This configuration would be a more pragmatic and effective approach to the issues of concern raised during the hearing. In this location, contaminants already present beyond the solid waste boundary in the Eastern Plume area would be intercepted before they discharge to the Cochecho River. Administrative protections, such as a groundwater management zone, could be established to limit land uses within the Eastern Plume area, located between the solid waste boundary and the repositioned treatment trench location. This area, for the most part, is currently owned by the City of Dover and is designated as the Hazardous Waste Landfill District by Dover Zoning Ordinance 170-28.5 that was: "*designed to alert the public and prohibit development activities in*

areas potentially affected by the storage of hazardous waste until such time as a final cleanup and proper closure of the site can be completed'.

The relocation of the treatment trench could also improve the constructability and maintenance of the proposed amended remedy. As currently proposed, the total length of the treatment trench along the southern and eastern boundaries of the landfill will be on the order of 3,000 linear feet. The relocation of the treatment trench to an alignment parallel to Tolend Road could shorten its total length to perhaps 1,500 feet. At the Tolend Road alignment, the saturated thickness (the vertical distance between the top of the water table and the top of the marine clay layer) is much less, ranging from approximately 60 feet at the northeast corner of the landfill to less than 30 feet at the B-9 monitoring well cluster location. The shorter and shallower excavation required for the treatment trench would greatly decrease the volume of waste generated during its construction. Periodic maintenance of the treatment trench would cost less if the acid washing isn't appropriate and the trench needed to be re-excavated (see Comment 1, above). Along the Tolend Road alignment the vertical hydraulic gradients are all downward and none of the hydraulic head levels above the land surface.

The Cochecho River would benefit as the groundwater seeps from the Eastern Plume that currently discharge to the river would be cleaned more quickly. The EPA's and DES's concerns regarding indoor air quality in residences north of Tolend Road would be permanently addressed as the groundwater beneath these residences would also be cleaned sooner.

I look forward to receiving an explanation as to why the alternative remedy for the Eastern Plume area, suggested above, has apparently not been fully evaluated.

If you have any questions about my comments, please feel free to contact me at: (603) 743-4290; or by e-mail: tomfargo@ttlc.net

Sincerely,

Thomas R. Fargo

cc: Dean Peschel, Dover Environmental Program Director
Lorie Chase, Cochecho River Watershed Coalition



Brian & Nancy
Limberger
<limberger@comcast.
net>

To: Darryl Luce/R1/USEPA/US@EPA
cc:
Subject: NH TAG Force Contributor

08/06/2004 08:42 PM

I was canvassed tonight by Sarah of the Clean Water Action of New England. I live in Dover, New Hampshire, and she informed me of the ongoing contamination of our reservoir and river here in Dover which accommodates several towns in the area with drinking water.

I was appalled. I donated \$120. What is going on here??? I blame it on this administration and the lack of awareness and concern for the environment to line the pockets of their friends. Don't get me started.

I was asked to write to the EPA to:

Consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.

Do not use local residents as guinea pigs for untested clean-up technologies without adequate safeguards.

Fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Parker
99 Belknap St
Bever, NH 03820

To: Barry Luce, USEPA

Dear Mr Luce -

I am a Bever resident and thus
very concerned about the cleanup of
the Bever Municipal Landfill.

I urge you to put public health
impacts above financial concerns in
choosing a cleanup plan for the site.

I urge you not to use local residents
as guinea pigs for untested clean-up
technologies without adequate safeguards.

I urge you to fully address limitations
of contamination to the Cocheo River,
as well as the reservoir.

Hopefully the clean-up remedy chosen
will expedite to cease pollutants to
the residents in the area. It was put
on the EPA's Superfund list in 1983.
This problem has been going on too long.

Sincerely, Mary Parker

David Hayes
202 Central Ave.
Dover, NH 03820

8/5/04

Dear Mr. Darryl Luce,

I Am writing you to express my concern about the hazardous waste site in Dover, NH. As a Resident of Dover I am Asking that you consider the following:

- public health and environmental impacts above financial concerns in choosing a cleanup Remedy for the site.
- Don't use Local residents as guinea pig for untested clean up technologies without adequate safeguards
- Fully address limitations of Contaminations to the Cocheco River, as well as the Reservoir.

Thank you for your consideration;
David Hayes

Darryl Luce, US EPA
1 Congress St., Suite 1100 (HBQ)
Boston, MA
02114

Please consider public health and environment impact above financial concerns in choosing a cleanup remedy for the site. Please do not use local residents guinea pigs for untested clean up technologies without adequate safeguards. Please fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Thank You,
Sincerely,

K. Jan Daniel

6 August 2004

13 Arbor Drive
Dover NH 03820-4501

Darryl Luce, US EPA
1 Congress St. Suite 1100 (HBO)
Boston MA 02114

Dear Mr. Luce:

PLEASE!

~Consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.

~Do NOT use local residents as guinea pigs for untested clean up technologies without adequate safeguards!

~Fully address limitation of contamination to the Cocheco River as well as the reservoir.

I Thank You....and your children's children will think you are a hero!

Sincerely,

Allen G. Barbi
Taxpayer and active Voter

To: Darryl Luce
US EPA
1 Congress St.
Suite 1100 (HBO)
Boston, MA 02114

Dear Mr. Luce,

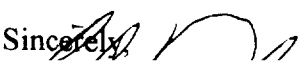
I am writing out of deep concern regarding the Tolend Road Landfill, also known as the Dover Municipal Landfill, located in Dover, New Hampshire. This site has been on the EPA's Superfund list for far too long causing great known and unknown risks to the surrounding towns that rely on the bodies of water located near the site.

I understand that a new "experimental" technique, called a "Sparging Trench" has been proposed for remediation of the site. According to the EPA there is a high degree of uncertainty that this technique will work and the alternate plan is to cap the site, a plan that was originally proposed over 12 years ago. Not only is there a high degree of uncertainty that this technique will even work, but it also fails to address the contaminants that have already migrated off site into the Cocheco River and Bellamy Reservoir which supplies a minimum of eight surrounding communities with their drinking water.

How many times will experimental projects be conducted and fail before action is taken to correctly adjust the site? How many lives will it take and what long term damage will continue to take place while we experiment? Experimental projects have failed in the past and once again, the EPA is skirting its responsibilities to protect the public in an attempt to save short term money.

The EPA has been aware of this site since 1981 and this site has been on the Superfund list since 1983. I would suggest that after twenty years something should have been done to permanently address this situation. Now is the time to take the steps that will be effective in removing the threat to the surrounding communities. Do not allow the residents of Dover and the surrounding communities to continue being used as "test agents" in order to save money. I urge you to place the environmental impacts and the health of the citizens of Dover above financial concerns. Your responsibility is to correct the contaminations which have taken place on this particular Superfund site and nothing less than known, proven and effective methods in removing the contaminants is acceptable. The Sparging Trench is another band-aide thrown on a deep wound that requires surgery. I urge you to take the effective steps to address this issue once and for all.

Sincerely,


Richard Auclair
99 Belknap St.
Dover, NH 03820
(603) 749-3166

Darryl Luce, US EPA
1 Congress St., Suite 1100 (HBQ)
Boston, MA
02114

Please consider public health and environment impact above financial concerns in choosing a cleanup remedy for the site. Please do not use local residents guinea pigs for untested clean up technologies without adequate safeguards. Please fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Thank You,
Sincerely,

) Kathryn Ann Bealorian Daniel

Mr. & Mrs. Adrien Landry

184 Locust St

Dover NH 03820

TO THE EPA,

WHEN CHOOSING A CLEANUP REMEDY,
FOR THE HAZARDOUS WASTE SITE IN DOVER,
N.H., PLEASE CONSIDER PUBLIC HEALTH &
ENVIRONMENTAL IMPACTS ABOVE FINANCIAL
CONCERNS.

DO NOT USE LOCAL RESIDENTS AS
GUINEA PIGS FOR UNTESTED CLEAN UP
TECHNOLOGIES WITHOUT USING
ADEQUATE SAFEGUARDS.

DO NOT FAIL TO FULLY ADDRESS
LIMITATION OF CONTAMINATION TO THE
COACHELO RIVER, AS WELL AS TO
THE RESERVOIR,

THANK YOU,
Joan M. Landry



8-5-04

Dear Mr. Luce,

Please take the people of Dover into account before accepting a new technique for which there is uncertainty as to whether it will work to clean up the contamination of the Tolend Road "Superfund Site."

Please ask for the use of technology that will clean up this hazard without further environmental damage.

Thank you.

Sincerely,

Carol Straton
Dover, N.H.

Dear Mr. Darryl Luce:

I am writing this letter to you on behalf of myself, my husband and most importantly, my children. We are long time residents of Dover, NH and we are extremely concerned with the future of the landfill here and what long-term effects it could have on our family if it were to go improperly treated. It is my understanding that a decision was made in 1991 by the EPA requiring that the site be capped and the ground water be pumped and treated. It is also my understanding that this decision was amended in 1996 to try a novel bioremediation pilot project that was unsuccessful and tossed aside. It has now come time once again for the EPA to make a decision on how to protect the water that is pumped into my home, which my children drink.

I am asking you to do the responsible thing and protect our water with the solution that works and not with one that might work, because we are the ones who will have to pay the ultimate price. Ask yourselves this question: If your child were extremely ill and there was an operation that could be performed that would bring him or her back to normal health and a slightly less expensive procedure that might bring him or her back to normal health. Which would you choose?

We are reaching out to you because you are our voice. Please hear our cries.

Respectfully Yours,
Mandy Bowden

8/5/04

Dear Mr. Darryl Luce:

I am writing this letter to you on behalf of myself, my wife and most importantly, my children. We are long time residents of Dover, NH and we are extremely concerned with the future of the landfill here and what long-term effects it could have on our family if it were to go improperly treated. It is my understanding that a decision was made in 1991 by the EPA requiring that the site be capped and the ground water be pumped and treated. It is also my understanding that this decision was amended in 1996 to try a novel bioremediation pilot project that was unsuccessful and tossed aside. It has now come time once again for the EPA to make a decision on how to protect the water that is pumped into my home, which my children drink.

I am asking you to do the responsible thing and protect our water with the solution that works and not with one that might work, because we are the ones who will have to pay the ultimate price. Ask yourselves this question: If your child were extremely ill and there was an operation that could be performed that would bring him or her back to normal health and a slightly less expensive procedure that might bring him or her back to normal health. Which would you choose?

We are reaching out to you because you are our voice. Please hear our cries.

Respectfully Yours,
Ernest Bowden

8/5/04

August 6, 2004

Cathy Pease
2 Hemlock Circle
Dover, NH 03820

Public Comments

Dear Mr. Luce,

I have some concerns about the proposed plan for a Superfund site in Dover. I am in favor of keeping costs down, but I also value safety, public health, common sense and good judgment. Please take the necessary time to ^{evaluate the} effectiveness of these proposals (i.e. - will this technique work? has it been tried?). Also, please consider and determine that whatever is built will not have an adverse effect on our ~~communities~~ ^{type} especially with regard to public health. Thank you.

Cathy Pease

Darryl Luce, US EPA
1 Congress St., Ste. 1100 (HBO)
Boston, MA 02114

August 6, 2004

Dear Mr. Luce:

Please consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the hazardous waste site in Dover, NH.

Don't use local residents and guests as guinea pigs for untested clean up technologies without adequate safeguards.

Fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Think about taking a swim in the Cocheco River with your loved ones and pets.

Please protect us.

Thank you.

Laurie Malizia, AS

lam

Darryl Luce, US EPA
1 Congress St., Ste. 1100 (HBO)
Boston, MA 02114

August 6, 2004

Dear Mr. Luce:

Please consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the hazardous waste site in Dover, NH.

Don't use local residents and guests as guinea pigs for untested clean up technologies without adequate safeguards.

Fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Think about taking a swim in the Cocheco River with your loved ones and pets.

Please protect us.

Thank you.

Mario Malizia, DBA

lam

To whomever gives a shit,

I wouldn't want your job, seeing as nobody obviously works there. I got a great idea!! Clean up the mess!!! Wow!!! everyone get off their high salary asses and grab a frikin mop, or are you all just waiting another 23 years for us to drink the problem away, look, I'm coming down hard on you cause I do care about the water my family drinks, as you should as well.

And forget all that "experiment" crap. Its too costly, do that on your own dollar., or... create your own mess and see if it works, or give me your job, I'll make some waves, and all of the weenies who push pencils would be pushing stools.

Seriously its not hard to figure out, noone wants to work, and after 23 years it is painfully obvious.

no hard feelings,

Karl A. Fly

Darryl Luce, USEPA

Please:

- 1) consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.
- 2) Don't use local residents as guinea pigs for untested clean up technologies without adequate safeguards
- 3) Fully address limitations of contamination to the Cochemo River, as well as the reservoir.

Thank You.

August 6, 2004

Mark Gemas
3 Shadow Drive
Dover, NH 03820

Mr. Darryl Luce, US EPA
1 Congress Street Suite 1100 (HBO)
Boston, MA

Dear Mr. Luce,

It has recently come to my attention that the Tolend Road Superfund Site in my community has still not been cleaned up, after contaminants were found in adjacent drinking water wells in 1981. This site was placed on the Superfund List over 20 years and has gone through at least one pilot project that was unsuccessful, and is being considered for another proposed plan that the EPA itself has declared to be uncertain of the outcome of this particular technique. As a resident of this rapidly growing community, I am asking you not to use local residents as guinea pigs for untested clean up technologies without adequate safeguards.

Before any more projects are started to clean up this area that affects the drinking water of at least eight surrounding towns, please consider the public health and environmental impacts above financial concerns in choosing a cleanup remedy for this site. I realize the estimated cost of the proposed trench is \$15.8 million compared to the \$29 million it would cost to cap the site. The capping of was originally proposed over ten years ago, but if the trench doesn't work, the \$29 million will still have to be paid (plus how much more it would cost in the future by the time the trench is completed).

I also understand that a large volume of the contaminants has already migrated off site and there is no way to control or capture this with the proposed trench. As a concerned citizen, taxpayer and resident of this community, I expect the EPA to fully address the limitation of contamination to the Cocheco River, as well as the Bellamy Reservoir.

I still cannot fathom why it has taken over 20 years to get this area cleaned up!! Please restore my faith that those placed in the position to do what is right and just for the community, the environment, and its citizens will do just that, and not base their decisions solely on the cost of an experimental treatment versus what has been proven to work.

Sincerely,



August 6, 2004

Lorie Gemas
3 Shadow Drive
Dover, NH 03820

Mr. Darryl Luce, US EPA
1 Congress Street Suite 1100 (HBO)
Boston, MA

Dear Mr. Luce,

It has recently come to my attention that the Tolend Road Superfund Site in my community has still not been cleaned up, after contaminants were found in adjacent drinking water wells in 1981. This site was placed on the Superfund List over 20 years and has gone through at least one pilot project that was unsuccessful, and is being considered for another proposed plan that the EPA itself has declared to be uncertain of the outcome of this particular technique. As a resident of this rapidly growing community, I am asking you not to use local residents as guinea pigs for untested clean up technologies without adequate safeguards.

Before any more projects are started to clean up this area that affects the drinking water of at least eight surrounding towns, please consider the public health and environmental impacts above financial concerns in choosing a cleanup remedy for this site. I realize the estimated cost of the proposed trench is \$15.8 million compared to the \$29 million it would cost to cap the site. The capping of was originally proposed over ten years ago, but if the trench doesn't work, the \$29 million will still have to be paid (plus how much more it would cost in the future by the time the trench is completed).

I also understand that a large volume of the contaminants has already migrated off site and there is no way to control or capture this with the proposed trench. As a concerned citizen, taxpayer and resident of this community, I expect the EPA to fully address the limitation of contamination to the Cocheco River, as well as the Bellamy Reservoir.

I still cannot fathom why it has taken over 20 years to get this area cleaned up!! Please restore my faith that those placed in the position to do what is right and just for the community, the environment, and its citizens will do just that, and not base their decisions solely on the cost of an experimental treatment versus what has been proven to work.

Sincerely,

6 August 2004

13 Arbor Drive
Dover NH 03820-4501

Darryl Luce, US EPA
1 Congress St. Suite 1100 (HBO)
Boston MA 02114

Dear Mr. Luce:

PLEASE!

~Consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.

~Do NOT use local residents as guinea pigs for untested clean up technologies without adequate safeguards!

~Fully address limitation of contamination to the Cocheco River as well as the reservoir.

I Thank You....and your children's children will think you are a hero!

Sincerely,

Elizabeth Ann Barbi

August 6th, 2004

Darryl Luce, US EPA
1 Congress St. Suite 1100 (HBO)
Boston, MA 02114

Tell EPA to:

1. Consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.
2. Don't use local residents as guinea pigs for untested cleanup technologies without adequate safeguards.
3. Fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Sincerely,



Katherine Frick-Wold
34 Tideview Drive
Dover, NH 03820

August 6th, 2004

Darryl Luce, US EPA
1 Congress St. Suite 1100 (HBO)
Boston, MA 02114

Tell EPA to:

1. Consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.
2. Don't use local residents as guinea pigs for untested cleanup technologies without adequate safeguards.
3. Fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Sincerely,

John Wold
34 Tideview Drive
Dover, NH 03820

Darryl Luce, USEPA
1 Congress St. Suite 1100 (HBO)
Boston, MA 02114

Mr Luce,

Please consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.

Don't use the local residents as Guinea pigs for untested clean up technologies without adequate safeguards.

Fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Respectfully

24 Tidewater Dr.
Dover, NH 03820

August 5, 2004

Darryl Luce, US EPA
1 Congress Street
Suite 1100 (HBO)
Boston, MA 02114

Dear Mr. Luce:

I support Clean Water Action. Please consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the Dover Superfund site. Don't us local residents a game pigs for untested clean up technologies without adequate safeguards. EPA must fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Sincerely,

August 5, 2004

Mr. Luce:

In regards to the Tolend Rd. Superfund site in Dover, NH, please:

Consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.

Don't use local residents as guinea pigs for untested clean up technologies without adequate safeguards.

Fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Sincerely,



138 Locust St Dover NH

David Forbes

August 5, 2004

Mr. Luce:

In regards to the Tolend Rd. Superfund site in Dover, NH, please:

Consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.

Don't use local residents as guinea pigs for untested clean up technologies without adequate safeguards.

Fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Sincerely,

Paula Forbes

188 Locust St
Dover NH

Darryl Luce, US EPA
1 Congress Street, Suite 1100 (HBO)
Boston, MA 02114

Dear Sir;

I am writing as a citizen of Dover, New Hampshire and I feel like I need to make my opinion heard on the matter of the Bellamy Reservoir in Dover.

I would hope that the EPA would consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for this site. This site should not be used for untested clean up technologies especially without adequate safeguards in place. It's also very important that contamination of the Cocheco River, as well as the reservoir, is limited.

The city of Dover has been working for a long and hard time to recover from the financial and environmental impact of being an industrial center. Mills have been refurbished to be used as office space, the downtown has been revitalized and a plan to dredge the river to open it to pleasure crafts has just gotten funding.

Sincerely,
Heather Cronin

Darryl Luce, US EPA
1 Congress Street, Suite 1100 (HBO)
Boston, MA 02114

Dear Sir,

I am writing as a citizen of Dover, New Hampshire and I feel like I need to make my opinion heard on the matter of the Bellamy Reservoir in Dover.

I would hope that the EPA would consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for this site. This site should not be used for untested clean up technologies especially without adequate safeguards in place. It's also very important that contamination of the Cocheco River, as well as the reservoir, is limited.

The city of Dover has been working for a long and hard time to recover from the financial and environmental impact of being an industrial center. Mills have been refurbished to be used as office space, the downtown has been revitalized and a plan to dredge the river to open it to pleasure crafts has just gotten funding.

Sincerely,
David Cronin

August 5, 2004

Darryl Luce
US EPA
1 Congress St., Suite 1100
Boston, MA 02114

Dover Municipal Landfill, Superfund Site


Dear Mr. Luce:

I have been reading about the EPA proposal to dig trenches at the Tolend Road Superfund Site. The apparent "selling point" is that it will cost the City less money. However, will it protect the Bellamy River Reservoir and the Cocheco River from contaminants? From what I have seen I am afraid the answer is no.

We need a plan that protects the public health and environmental concerns this site has generated. As a taxpayer I am concerned about the impact of these trenches. Apparently the cost of this untested process is in excess of \$15 million, I would urge you to rethink this a good with a proven tested process, even if it does cost more. We need to know that the contaminants will be effectively contained. Don't make Dover resident's guinea pigs for this untested process. This process has been going on for over twenty years, it time to take decisive action, not experiment with untested theories without adequate safeguards.

I would urge that you not make the Tolend Road Superfund Site an experiment. I urge that EPA use proven tested methods to clean up the plume of contaminants headed toward the Bellamy and Cocheco Rivers.

Sincerely,

 Bill McCann
20 Fisher Street
Dover, NH 03820-3943

Darryl Luce, US EPA
1 Congress St, Suite 1100 (HBO)
Boston, MA 02114

Dear Mr. Darryl Luce:

We are concerned Dover citizens who want to remind you of the importance of cleaning up the contamination in the Cocheco River. I ask you to please consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.

In the process of the clean up, do not use residents as guinea pigs for untested clean up technologies without adequate safeguards.

We also want you to fully address limitation of contamination to the Cocheco River, as well as the reservoir.

Thank you for your time.

Sincerely,

Rebekah Brooks
Matthew Lister
93 Henry Law Ave
Apt 72
Dover NH 03820

Darryl Luce, US EPA
1 Congress Street, Suite 1100 (HBO)
Boston, MA 02114

Dear Sir;

I am writing as a citizen of Dover, New Hampshire and I feel like I need to make my opinion heard on the matter of the Bellamy Reservoir in Dover.

I would hope that the EPA would consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for this site. This site should not be used for untested clean up technologies especially without adequate safeguards in place. It's also very important that contamination of the Cocheco River, as well as the reservoir, is limited.

The city of Dover has been working for a long and hard time to recover from the financial and environmental impact of being an industrial center. Mills have been refurbished to be used as office space, the downtown has been revitalized and a plan to dredge the river to open it to pleasure crafts has just gotten funding.

Sincerely,
Henry Cronin

I feel that the super fund money for projects like Toland landfill should have been included in the annual fund. This is typical Bush cut the money in projects that are needed but spend it elsewhere. Instead of going it alone in the middle east he should have waited longer and get more help from major countries. But he's proud of what he done and spend billions. It's about time he concentrates on domestic problems. He spent the surplus and has us in a deficit. Hundreds of men are dying and being wounded to secure the oil for the oil barons of this nation including Bush and his allies.

The money for this project should be allocated. Our congressional representatives should be fighting for us but they just go along with the administration.

I personally am disgusted with the way this administration is operating.

Marie Trindade
3 Arbor Dr.
Dover, NH 03820

Action alert:

I am extremely disappointed in the fact that it has taken so long for appropriate action to be taken on hazard wastes in N.H. Down especially for I live here. There must be a workable way to clean up the contaminants. People are depending on your help. (EPA) We are not guinea pigs. Clean up the site now in the Cocheco River + Bellamy River.

Judrey L. Corvet

06 August 2004

19 Birch Drive
Dover, NH 03820
March 3, 2003

Darryl Luce, US EPA
1 Congress St., Suite 1100 (HBO)
Boston, MA 02114

Dear Mr. Luce,

I am writing to express concern over the EPA plan to spend \$15.8 million dollars on an experimental fix, "sparging", on the Dover Municipal Landfill, also known as as the Tolend Road Superfund Site. The Dover Municipal Landfill was closed in 1980 and has been Superfund site since 1983. The fact that the landfill qualified as a Superfund site indicates that it is serious enough to warrant a tried and true remedy. The citizens of surrounding communities have lived with this hazard far too long.

Please consider the health and environmental issues surrounding this issue above financial concerns when choosing a course of action for the Tolend Road Superfund Site. I understand that you have a responsibility to your agency but please do not forget that your first responsibility should be the safety of the people who depend on you to act in our best interest. We are entitled to safe drinking water and clean rivers. As an agent of the EPA, you have the power to ensure that we are not used as a test site. I trust that when deciding this issue, your first concern will be what is best for the residents of surrounding communities and the environment we live in not the budget.

Sincerely,

Dorothy Buell ^u

Send us Your Comments

You may provide EPA with your written comments about the Amended Proposed Plan for the Dover Municipal Landfill Site. You can use the form below to send written comments. Please mail this form and any additional written comments, postmarked no later than July 22, 2004 to:

Darryl Luce

U.S. EPA

1 Congress St., Suite 1100 (HBO)

Boston MA 02114-2023

fax: 617-918-1291

e-mail: luce.darryl@epa.gov

Brian Stern has my permission to present these comments. They are my personal comments. I am particularly concerned with the Eastern Plume and its effect on the Cobscook River. Until a biological assessment is completed, appropriate decisions for a remedy cannot be made. The health of the river is important and the NH DES has laws to protect it. DES should be given full support. Major efforts to improve the river upstream & downstream in the Cobscook are underway. This is another way to add to that effort.

How well is sparging understood?

Comments Submitted by: Loretta B. Chase (attach additional sheets as needed)

July 19, 2004



Art Corte
<acorte@comcast.net
>

To: Darryl Luce/R1/USEPA/US@EPA
cc:
Subject: Dover landfill remediation

06/22/2004 08:48 AM

I support the amended proposed plan presented last night (SC-A and MM-4) on condition that the entire project not be undertaken at once. As the sparging wall technique proposed has not been proven effective for Dover's particular conditions, its efficacy should be confirmed by building a section of the proposed wall and monitoring its effectiveness before committing to building the entire wall.

As the owner of two houses located in the middle of the Eastern plume, I am anxious that some remedial action get taken, this remediation study has been going on for years, the time has come to see some action

Arthur B. Corte
81 Glenhill Road
Dover NH 03820
603 749 4366



CLEAN WATER ACTION

NATIONAL OFFICE

4455 Connecticut Avenue,
Washington, DC 20008-2328
(202) 895-0420

NEW HAMPSHIRE OFFICE

163 Court Street
Portsmouth, NH 03801
Phone (603) 430-9565, Fax (603) 430-9708
e-mail: portcwa@cleanwater.org

Darryl Luce,
US EPA, Region 1
1 Congress St., Suite 1100 (HBO)
Boston, MA 02114

Re: Dover Municipal Landfill Superfund Site – Amended proposed Plan

Dear Mr. Luce,

On behalf of Clean Water Action's 3,000 New Hampshire members, including over 1000 in communities where drinking water could be potentially impacted by contaminants by this site, I would like to submit the following comments on your proposed plan.

In general, we are very concerned about the uncertainties inherent in the unorthodox proposal for this site to forgo capping the landfill and relying on unproven technology to capture most of the groundwater pollutants leaching from the site. We have already seen a decade of delay in fully addressing this site due to previous experimentation. Given the uncertain movement of the southern plume threatening drinking water supplies, it does not appear that we can afford to wait another decade or more to find out if the current proposed alternative is working or not.

While Clean Water Action supports in principle the use of technological innovations to actually clean up toxic sites, there remain too many uncertainties associated with this plan and with the use of a sparging trench in particular. It appears that more research needs to be conducted prior to adopting this remedy to really determine its likelihood of success. The long timeframe assumed for this alternative is also troubling, given the difficulties of projecting responsibility for the process, maintenance and thoroughness of results so far into the future.

We are also very concerned with the lesser amount of attention given to addressing the eastern plume impacting the Cocheco River. While drinking water protection is of course a higher priority with this site, it appears that effort to reduce and clean up the pollutants impacting the river are getting short shrift in this plan. It is simply unacceptable to allow continued arsenic contamination given the levels already measured in sediments and groundwater in the vicinity. Like many of our local waterways, the Cocheco River has received increased attention in recent

years toward cleaning up past pollution as well as making it more accessible for recreation. It is a vital resource for the community that must not be allowed to be further polluted.

While I am not able to provide a further detailed critique of your proposed plan, I would like to add our support to the comments submitted by the NH TAG Force/Brian Stern. In closing, I would ask that you fully consider public health and environmental impacts above financial concerns in choosing a cleanup remedy for the site.

Thank you for your attention to these comments.

Respectfully Submitted,

Doug Bogen
NH Program Director
Clean Water Action



Brian Stern
<Brian@sternlawoffice.com>

08/11/2004 04:56 PM

To: ahoffman@des.state.nh.us, Darryl Luce/R1/USEPA/US@EPA
cc:
Subject: Tolend Road, Dover, NH, Municipal Landfill Superfund Site

Mr. Andrew Hoffman
NH Dept. of Environmental Services
6 Hazen Drive
Concord, NH 03302-0095

Darryl Luce, Regional Project Director
U.S. EPA Region 1(MBO)
One Congress St.
Boston, MA 02114-2023

Dear Messrs. Hoffman and Luce:

Attached are the final comments of the NH TAG Force with reference to the Dover, NH, Municipal Landfill.

Sincerely yours,

Brian T. Stern



Comments on FSSA - final revision Aug 11 (2).doc

**COMMENTS ON THE FOCUSED FEASIBILITY STUDY ADDENDUM
DOVER LANDFILL NPL SITE
DOVER, NH**

**Submitted by:
NH TAG Force Group
August 11, 2004**

INTRODUCTION

The City of Dover Municipal Landfill was closed in 1979 because it was known at that time that industrial waste and other noxious materials were emanating from the fill. Two and one half decades later, the debate on the most effective and cost-effective method of remediation and closure continues. This debate continues even though a remedy was approved by the Agencies (NHDES and USEPA) in 1991 and a 100-percent design was completed in 1996.

Upon review of the recently completed Focussed Feasibility Study (FFS), prepared by the Work Settling Defendants or PRPs, as well as the Focussed Feasibility Study Addendum (FFSA), prepared by the EPA, salient questions for both parties remain. These questions are presented below.

Governmental agencies have imposed enormous costs on surrounding communities to improve the water quality of the Cocheco River. This has affected sewage treatment plants and other point and non-point sources. Dover in particular is actively pursuing and promoting the Cocheco River as a focal point for downtown revitalization and recreational activity. Millions are being spent on dredging the Cocheco River, justified by the removal of contaminants. There is a large population base moving into the Seacoast area and populating areas along the River. The river is widely used for fishing and, potentially, for swimming.

It appears that NHDEP and EPA are prematurely proposing a remedy in the FFSA. The Agencies admit in the document that there are numerous remaining unknowns regarding site conditions and potential future impacts, and that a host of pre-design studies will be needed to determine if the proposed remedy (Mixed Alternative) will achieve its objectives. Accordingly, we suggest that a plan be implemented based upon what is known, proven, and reliable. We object to a plan that is based on guesswork and conjecture and requires a substantial contingency plan in event of failure. The proposed plan has a combination of unproven technologies, further delays, inattention to the Cocheco River, and the potential for greatly increased costs if a contingency plan is triggered. The combination of these shortcomings must be considered in the final remedy selection.

Following is a discussion of issues raised by the NH TAG Force, by topic, related to the proposed remedy. Also included are questions to which we would like a response from the NHDEP and EPA.

SOURCE CONTROL

The currently proposed source control remedy, SC-A, proposes an earthen (permeable) cover and a deep (up to 100 foot) perimeter sparge trench. The use of the sparge trench for the combined purpose of recovery of VOCs, the attenuation of THF, and precipitation of arsenic has never been proven. The previous remedy put forth in the 1991 ROD (as described in the 1996 100% Design Report), included installation of a RCRA "C" cap, the installation of interception trenches (to only 25 feet) and extraction wells (into the interbedded zone), and either on-site treatment and disposal (preferred) or off-site treatment and disposal. This was identified as source control remedy SC-7/7A.

In the Agencies' comparison of SC-A and SC-7/7A, the following issues were raised as the most critical:

- SC-7/7A would cost more due to waste recontouring (minimal) and 150,000 (+/-) CY of imported fill, and the construction of a RCRA "C" cap.
- SC-7/7A will entomb the waste so that it never "goes away".
- SC-A will "wash" all of the contaminants out of the waste, leaving a benign pile of rubble.

The NHDES and RCRA will require, at the conclusion of the currently proposed remediation at the site (SC-A), that a clean landfill closure be completed. This will, in all likelihood, be a RCRA "D" cap, which will have the same fill requirements as the "C" cap to get to appropriate grades. The problem with capping the Dover landfill is not due to its size; it is its flatness. Caps are required to maintain minimum slopes regardless of whether they are "C" or "D". The same amount of fill (150,000 CY) will be required to close out the SC-A remedy (albeit far in the future) with the same noise, dust and safety issues as today, but with more people and homes in the area. **Are these costs and risks included in the assessment of SC-A?**

The full costs of the sparge trench in comparison to costs of a cap appear not to be considered. SC-7/7A was completely designed in 1996 and had a schedule for completion in late 1998. **Are the costs associated with intervening activities (1996-2004); proposed pre-design activities: 30, 60, 90, and 100-percent design activities; legal work; and related agency oversight included in the cost for SC-A? Are the full design costs for the trench included in comparison to the cost for a cap design that has already been paid for and completed?**

Regarding the entombment of waste, this is not an altogether unheard-of approach to waste management. Natural degradation of the waste will continue to occur. As the decay progresses, waste fluids will be squeezed out of the refuse and collected by the remediation system. The agencies should consider a combination of the best parts of each remedy is applied.

Under the currently proposed remedy (SC-A) the site will not be available for re-use. If the site is capped, there is potential for re-use of the land.

When the concept of the bioremediation approach supplanted the SC-7/7A approach in 1996, the engineers and the Agencies were discussing the possibility of developing a "leaky" cap for use with the SC-7/7A groundwater collection and treatment system. In this way, the waste would be

rinsed (as touted in the SC-A remedy) and the groundwater will be collected and treated in a proven (and currently mostly designed) manner. The entombment issue goes away, as does the fear of the failure of the untried treatment remedy. As noted earlier, the cost and nuisance of landfill closure (cover) is required regardless of the approach. The only significant difference in cost is the geomembrane. **Why did the PRPs and the Agencies abandon the SC-7/7A remedy?**

What is the expected frequency on which the precipitated iron and arsenic will be cleaned from the sparge trench? What technology will be used and what are the potential concerns with it? There is a long list of trench problems: clogging, channeling of water and air, ability to recapture precipitate, acid washing and mobilizing a highly concentrated arsenic wastes. Blowers will be required for estimated 75 years. The noise will be unabated 24 hours a day for 365 days per year for 75 years. **Is the cost of running, maintaining, and replacing the blowers calculated?**

There is concern that the trench will have to be maintained for at least 75 years, and probably longer. We object to plan that relies upon uncertain social, economic and political factors to complete the clean up.

The cost for the trench seems to be based on twenty 20 years of operation, while contaminants are expected to persist at levels above clean-up criteria for 75 to one hundred years.

If sparging trench is installed and later found to be ineffective in achieving cleanup criteria, what is the anticipated cost to implement the contingent source control remedy, that being conversion of the sparging trench to a ground water collection trench and capping of the landfill? **If not and SC-A fails, how will it be abandoned?**

The existing deep trench (not part of the 7/7A remedy) will create potentially problematic short circuits between the soil stratigraphic layers. **Will the trench be backfilled with materials attempting to mimic the glacial deposition?** This might be very difficult, especially after extracting the existing matrix from within the trench. The shallow collection trench and wells of the 7/7A remedy were proposed for the same footprint as the sparge trench. **Will the replacement system be placed in-board or out-board of the abandoned trench?** There maybe hydraulic influences associated with the abandoned trench.

How are you going to set up sensors and monitor whether the trench works? What will be considered effective?

There are two distinct plumes of underground water, with different pressures. Their flows are not fully understood and may change over time. Concern exists that the trench for the sparge wall will alter ground water flow patterns, including "short-circuiting". As a result of the trench, the flow can shift in a greater amount to the Bellamy Reservoir, toward the Cocheco, or in a third direction not yet considered in the clean up plan.

The wall can be moved eastward to capture contaminants that have already migrated off site toward the Cocheco. This will address a problem currently ignored (the Eastern Plume – see below).

SOUTHERN PLUME

Page 12 of the FFSA indicates that the Agencies are concerned that the “current nature and extent of contamination in the Southern Plume is generally unknown and appears to be worsening.”

The well reportedly most down gradient of the landfill in the Southern Plume, well SB-B2, is highly contaminated with benzene, THF and vinyl chloride, and concentrations are rising. Well SB-B2 is located roughly 500 feet from the landfill and 1000 feet from the Bellamy Reservoir. Further downgradient wells do exist (the SB-D cluster, the SB-GW-3 cluster, and OW-1), but, according to the EPA do not fall along the same flowline or monitor the same horizon as SB-B2 (located in the upper portion of the upper interbedded zone). The observed localized variability of groundwater quality data and the elevated levels at the SB-B2 location suggest that a more detailed understanding of the hydraulics and water quality of the Southern plume should be considered.

The Agencies should direct the PRPs to proceed with appropriate pre-design studies as soon as possible and implement the extraction and treatment system. **Is it possible to accelerate the testing and implementation of Management of Migration remedy MM-4, regardless of action on other issues at the site?**

Once new wells are installed, the hydraulic and water quality data gleaned from the studies can be used to properly design and monitor an appropriate remedy, if subsequently deemed necessary.

Immediate implementation of source control of the Southern Plume is necessary. If there is any challenge or delay anticipated in the PRPs implementing source control cleanup of the Southern Plume (pump and treat), then Superfund resources should be expended to implement it. If the intent to use Superfund money is considered, the PRPs may reconsider advancing remediation of the Plume in order to retain control. The Agencies should utilize whatever measures available to force the PRP group to aggressively implement the Southern Plume remedy.

EASTERN PLUME

Failing to cut off the source of arsenic (or arsenic-mobilizing characteristics) from the Eastern Plume has allowed arsenic in groundwater to remain at high levels (generally 10 to 50 times the standard) within the Eastern Plume. As no drinking water supplies are currently allowed within the plume area, the primary exposure to the risks associated with arsenic are upon discharge to

the Cochecho River and the so-called "swale". Once in the river or swale, the arsenic immediately precipitates into solid form and becomes a sediment issue.

Page 12 of the FFSA indicates that the Agencies believe that "there is no discernable, decreasing trend for arsenic in the Eastern Plume that shows cleanup levels being approached in a reasonable timeframe. The entire mass of arsenic currently in this plume will discharge to the Cochecho River. Additional arsenic that migrates offsite between now and implementation of the Source Control remedy will also leach into the river.

Samples have been collected and analyzed and have revealed that sediments on the landfill side of the Cochecho already exceed the threshold cancer risk of 10^{-4} and NOAA freshwater screening levels. Human health risks posed by arsenic concentrations in Cochecho River sediment are already bordering acceptable risk ranges established by EPA. This has already been characterized sufficiently to know it must be addressed. It is certain that there will be future accretion of arsenic in sediment over the next 50 to 100 years

Based on these observations, a second, and perhaps third, level of ecological assessment will be completed, based on the failure to "pass" the first tier assessment. We feel that the discharge of arsenic into the Cochecho River creates unacceptable ecological and human health risks. We believe that the future studies that are being required will determine that the contaminants represent a risk to human health and the environment (as measured during PDIs or routine future monitoring). We believe the Agencies will require the PRPs to remove the impacted sediments.

Sediments in the Cochecho will have to be removed. Under the current plan periodic removals will be necessary. It appears much better to eliminate the source of continue contaminants rather than have to periodically track and remove sediments, particularly when they may not be able to be tracked.

Sediments will continually discharge into the river. However, contaminants can be resuspended in the water and distributed to areas of greater risk. Most certainly, the sediment in the river can be expected to wash downstream. This is certain to have already occurred. Accordingly, the level of contaminants in the sediment adjacent to the site will continue to be near the threshold levels, yet it is inappropriate to consider just the local sediment. The Agencies must consider that a constant flow of contaminants is entering the ecosystem and mobilizing over a wider area. These contaminants may concentrate in areas such as behind the first dam. However, this is not certain. During flood stages every year, silt is deposited on adjacent farmlands, such as the County Farm, that was recently put in to a conservation easement. This is the first county land to have been put into a conservation easement. Wherever contaminants are deposited they may be easily redistributed with flood stages and distributed to areas of higher risk. **Is there any plan to identify such downstream sediment collection areas and sample them now and in the future?**

Monitored natural attenuation is not an appropriate selection for the Eastern Plume management of migration remedy. MNA is determined as inappropriate for the Southern Plume. Conditions do not exist as the site for MNA. Yet, MNA is proposed for the Eastern Plume. The proposed plan for the Cochecho River is more akin to no action.

In the 1996 100-percent design documents, a form of MNA was recommended for the Eastern Plume. This was likely based on the assumption that a proven methodology for arsenic and VOC collection and treatment was to be installed as early as 1998. Under the current plan, if not successful in the implementation of the SC-A remedy, it may be another ten years before a proven remedy is installed. By then, arsenic concentrations in Cocheco sediments may far exceed standards and require remediation. It is possible to cost effectively implement a pump-and-treat system within the Eastern Plume in the near term that could reduce the concentrations of arsenic seeping into the Cocheco. The EPA in an e-mail dated June 29, 2004 to the NH TAG Force opined that it would cost little more to pump and treat the Eastern Plume than the cost of MNS. **Would then Agencies consider a plan to further characterize the hydraulics and water quality of the Eastern Plume and develop a contingency plan to ameliorate potential impacts to the Cocheco sediments and to enhance cleanup of the groundwater within the plume? We request that the discharges into the Cocheco River be addressed now, as part of this plan. We request that pump and treat be implemented now, without delay, using superfund resources, for the Eastern Plume.**

There seems to be no concern for the aesthetic impacts and noxious odors from the seeps into the river. It should be noted that the river is being promoted as a recreational resource.

AIR QUALITY

Indoor air samples should be collected to evaluate potential impacts to homes above the Eastern Plume. Will the continued migration of the plume potentially create conditions for VOCs in groundwater worse than presently exist? There should be no further delay in assessing indoor air quality in residences above the Eastern Plume, if there is any possibility of impacts. MNA cannot be selected for the Eastern Plume so long as the potential for indoor air impacts have not been assessed.

The sparge trench is also likely to concentrate VOC vapors and pose an additional risk of indoor air pollution, or an additional cost to capture and remove the off-gases. The sparge trench will also create odors. The agencies must also consider the existing background odors from the nearby Turnkey landfill operated by Waste Management.

What is the likelihood of the sparging trench mobilizing noxious odors from beneath the landfill cover and being discharged to ambient air?

OTHER ISSUES

The area of localized groundwater contamination in the NW corner of the landfill should be investigated not as part of pre-design studies, but as part of the overall characterization of the landfill impacts.

The public should be presented with detailed information on anticipated impacts to wetlands caused by the remedial alternatives, as well as conceptual mitigation measures.

If a plan is selected that requires additional pre-design study, the public requests an opportunity for review and comment in the future.

TIMING

The Work Settling Defendants (the PRPs) will be allowed one year to complete their PDIs (fall 2005). It will then take the Agencies the better part of a year to make comments (summer 2006). The PRPs will then take at least a year preparing design documents (summer 2007), which will take a minimum of six months to approve (winter 2007/2008). Work will begin in the spring (spring 2008) and will take (according to the FFSA) 2.5 years (fall 2010). After three years, the system will be evaluated for efficacy (fall 2013). If the proposed system does not work, implementation of SC-7/7A will be required. This will take (according to the Agencies) two years (fall 2015). This is 17 years after the design start-up date of the original SC-7/7A. We ask the EPA and DES to consider the relative speed by which the alternative remedies can be implemented. The speed of implementation impacts both risk factors from contaminants and the present value of dollars as opposed to anticipated inflated costs.

The FFSA indicates that clean-up levels will not be met for arsenic in the Eastern Plume for 75 years, based on current modeling. See page 36 of Addendum. Why is this timeframe acceptable to the Agencies? Historically, "reasonable time frames" have been twenty or thirty years. Should not something be done to accelerate the removal of arsenic from groundwater in this area?

The agencies must avoid anticipated challenges to the Plan. The Agencies have not approved modeling results done by the PRP, which modeling indicates that arsenic may not be remediated to acceptable levels in ground water under the Proposed and Proposed Mixed Alternatives, and therefore opens the door for a potential request for a **"technical impracticability waiver"**. We object to this plan that anticipates an objection/appeal based upon technical impracticability waiver. We object to this plan that presents contingencies to which the agencies can anticipate an objection or appeal by the PRP's. **Why would the Agencies propose a plan to which they can anticipate objections/appeals and further delay the process?** The original ROD went through the entire process with full comment period. The PRP's were given an opportunity with an alternative bio-remediation plan, which has failed. There would be fewer challenges to re-implementing the original ROD.

The trigger mechanism for the contingency is not well defined and simply posturing this case for further litigation, delays and additional costs.

CONCLUSIONS

Arsenic results in Cocheco River sediments exceed first tier ecological risk characterization criteria at four sampling locations. The potential for human health and ecological risks from arsenic in sediments along the banks of the Cocheco River has been identified. **Therefore, we**

strongly urge the Agencies to now without further delay to abate the ongoing discharges of contaminants to the Cocheco.

Page 29 of the FFSA states “ the RFFS does not contain or reference an MNA analysis, either with or without the air-sparging trench, that properly demonstrates that the toxicity, mobility, or volume of all site ground water contaminants have been or will be sufficiently reduced to levels that are protective of human health or the environment in a reasonable amount of time”. Natural attenuation did not even work with the assistance of bioremediation. That effort failed. There is no decreasing trend in the pollution. **It is therefore unreasonable to propose MNA for the Eastern Plume!**

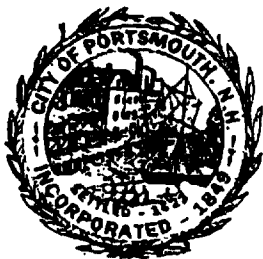
MNA is determined as inappropriate for the Southern Plume. Conditions do not exist as the site for MNA. Yet, MNA is proposed for the Eastern Plume. The proposed plan for the Cocheco River is more akin to no action.

There is significant concern over the Agencies level of certainty regarding performance of the sparging trench. It is a very costly endeavor and the technology has not been proven at the proposed depths and in providing three types of treatment simultaneously: VOC removal, arsenic precipitation, and enhancement of natural degradation of THF. We are concerned that for the proposed remedy there is no basis for experience or proven success. The proposed plan needs extensive pre-design work, long delays before implementation, will have to be phased in to see how it works, requires a contingency back up plan, and is likely subject to challenges by the PRP. **Accordingly, we strongly suggest a cap or leaky cap with groundwater extraction and treatment, with a high probability of success (regardless of shifting site characteristics) and that is already designed.**

The cap with a collection trench will eliminate uncertainty, eliminate a contingency plan, speed up the cleanup, reduce likelihood of challenges, and cost less if a closure cap is needed anyway, and cost less if a contingency is triggered.

The Agencies should proceed with all possible speed to characterize the Southern Plume and develop an appropriate remedy. It may not be necessary to delay in the implementation of this while the source control remedy is being finalized.

In summary, the Agencies should abandon the proposed SC-A source control remedy and implement the SC-7/7A remedy proposed in the 1991 ROD. Further, active remediation of the Eastern Plume should be implemented to abate contaminant discharges to the Cocheco River and reduce the potential for adverse indoor impacts. Lastly, the Agencies should expedite the characterization and remediation of the Southern Plume as a valuable water resource is in significant danger.



August 10, 2004

PUBLIC WORKS DEPARTMENT

CITY OF PORTSMOUTH

680 Peverly Hill Road
Portsmouth N.H. 03801
(603) 427-1530 FAX (603) 427-1539

Mr. Darryl Luce
Remedial Project Manager
United States Environmental Protection Agency
Region 1, Office of Site Remediation and Restoration
One Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

**Re: Draft Revised Focused Feasibility Study
Dover Municipal Landfill Superfund Site
Tolend Road - Dover, New Hampshire
Review Comments**

Dear Mr. Luce:

The City of Portsmouth is pleased to offer the attached comments to the Draft Revised Focused Feasibility Study (RFFS), prepared by GeoInsight, Inc., dated January 30, 2004, for the Dover Municipal Landfill Superfund Site (landfill). These comments were prepared with the assistance of our consulting engineer Weston and Sampson. The City of Portsmouth owns and operates the Portsmouth Water System. The Bellamy Reservoir, located to the south of the landfill, supplies over 50% of the drinking water to that system. The Portsmouth Water System is a regional water system that serves customers in Madbury, Durham, Dover, Newington, Portsmouth, Greenland, New Castle, and Rye, New Hampshire. The presence of contamination in close proximity to this drinking water source is of serious concern to the City of Portsmouth.

If you have any questions or require additional information please call me at 766-1416.

Respectfully submitted,
City of Portsmouth

Peter Rice, P.E.
City Engineer, Water/Sewer Divisions

PHR/phr

cc: Steve Parkinson, P.E., Director of Public Works
David Allen, P.E., Deputy Director of Public Works
John J. Boisvert, P.E., Weston and Sampson Engineers

Weston & Sampson
ENGINEERS, INC.

MEMORANDUM

TO: David S. Allen, P.E., Deputy Public Works Director

FROM: John J. Boisvert, P.E. *JJB*

DATE: August 10, 2004

SUBJECT: Tolend Road Landfill – Revised Focused Feasibility Study Comments

CC: Peter Rice, P.E. City Engineer, Water and Sewer Divisions
George D. Naslas, P.G., LSP, Weston & Sampson

Background

The RFFS provides a history and background of the Tolend Road Landfill. The landfill lies geographically between the Cocheco River and the Bellamy Reservoir. The landfill lies on the watershed divide and over the groundwater flow divide identified in the RFFS. Contamination at the landfill consists of chlorinated solvents, petroleum based compounds and dissolved contaminants (e.g. minerals). Based on the RFFS, and previous efforts, two groundwater contamination plumes emanate from the landfill. One plume is migrating north and east towards the Cocheco River and the other is migrating south in the direction of the Bellamy Reservoir. The southern plume is of primary concern to the Portsmouth Water System and is the focus of our review of the RFFS as it may threaten a regional drinking water source. New Hampshire groundwater quality criteria/standards as cited in Env-Wm 1403.03(a) state "groundwater shall be suitable for use as drinking water without treatment.

Geologic and Southern Plume Characterization

At this time we believe the southern plume has not been adequately characterized. A significant data gap exists in the monitoring well network used to characterize the hydrogeology south of the landfill. The aerial and vertical extent of the plume and its migration towards the Bellamy Reservoir are not fully understood. To close these data gaps and that the treat posed by the southern plume to the Bellamy Reservoir, the City of Portsmouth requests that the following be required at a minimum:

- Additional monitoring wells are required to evaluate contaminant migration (horizontal) information gaps and additional clustered monitoring wells are required to provide a more complete vertical profile of water quality between the landfill and the Bellamy Reservoir. This same concern has been identified in the RFFS on page 1-25.
- The placement of well screens should intersect the interfaces of the identified geologic strata. Of particular importance would be the clay/sand boundary and the bedrock overburden boundary.



- There seems to have been a reliance on previous investigations to characterize the presence and extent of the clay layer, additional site specific work is necessary based on the limited information provided.
- The structural condition of the clay must be evaluated and reported in order to determine whether or not it is "impermeable" or could it contain desecration cracks, fissures, or interbedded sand/silt lenses, rendering it less than impermeable. These structural features, if present could present a mechanism for contaminant migration.
- The response (sampling/monitoring/reporting) protocols when contamination is identified in monitoring wells or surface water must be clearly defined in a standard monitoring plan or standard operating procedure. The plan should identify the following:
 - The resample protocol when contamination is discovered.
 - If contamination appears in a shallow well, deeper wells adjacent to the discovery should be sampled at the time of resample.
 - The down gradient monitoring wells to be sampled, and when.
 - The laboratory turn around time for reporting and the notification requirements to the Portsmouth Water System and the public.
- It does not appear that Bellamy Reservoir sediments have been sampled and analyzed in recent history (e.g. not within the last 10 years). We recommend that this be an annual requirement at two locations along the northern shore of the reservoir.
- Well cluster MW-102 is on the shore of the Bellamy Reservoir and could act as the final sentry well, yet sampling (e.g. seasonal) is not performed in the well cluster next to this important drinking water source. Regardless of its distance from detected contamination this well cluster should be sampled biannually at a minimum.
- Along the Bellamy Reservoir, there has been a less than adequate characterization and discussion of groundwater flow into the reservoir. Additional piezometers and monitoring wells are needed along the reservoir to monitor potential contaminant migration into the reservoir. This assessment would help ensure that groundwater flow to the reservoir is adequately characterized and monitored.

Air Sparging Trench Technology

The application of air sparging technology in a deep and relatively long trench is a new application for this technology and not well documented in the literature under similar site conditions. The pursuit of this technology would not be advisable without a contingency plan in place should it be determined that the technology is not appropriate and fails to achieve the predicted performance. It is our understanding that the 1991 ROD remedy is 100 % designed and ready for implementation if the proposed solution is determined to be inappropriate for this application.



Weston & Sampson
ENGINEERS, INC.

Contingency Planning and Communication

Given the sensitivity of the Bellamy Reservoir and the necessity to ensure that public health is protected, open communication with the Portsmouth Water System managers is required. We understand a passive drain will be installed in the trench as a contingency however, the effectiveness could be significantly reduced if the trench is fouled by mineral deposition and bacterial growth. As the water system operator, the City of Portsmouth in order to make decisions to protect human health, must be provided information as it becomes available regarding the south plume including:

- Water quality data especially when preliminary laboratory data suggest an imminent risk to the Bellamy Reservoir or when it is detected where it previously was not.
- Project schedule updates.
- Notification of project changes including but not limited to alterations of monitoring frequency, changes in project management (contacts), technical changes and schedule changes.
- We recommend that a backup contingency plan is in place assuming the failure of the proposed system or its abandonment during the predesign/design phase of the project.

In addition the City of Portsmouth should recommend that a public notification and education plan be developed as part of a contingency plan should contamination pose a threat to the Bellamy Reservoir or be detected in the Bellamy Reservoir. The plan should include the following:

- Clear notification requirements and procedures with respect to the Portsmouth Water System and the general public.
- A program to address public concerns over their drinking water quality and safety.
- A plan to implement additional treatment at the Portsmouth Water System's Madbury Water Treatment Facility if necessary or provisions for an alternative source of water to the Portsmouth Water System.
- Reserved financial resources to assist the Portsmouth Water System in ensuring drinking water quality should the Bellamy Reservoir be impacted.

Summary Comments

- The installation of additional monitoring wells should be initiated immediately to fill data gaps and adequately characterize the geology south of the Landfill and the southern plume.
- Existing wells, recently gone unsampled, in the southern plume should be sampled immediately or during the next scheduled sampling period. It is our understanding that this has recently taken place. The Portsmouth Water System should request that the monitoring results be provided and that monitoring continues until additional wells, necessary to fill data gaps, are installed.

Weston & Sampson
ENGINEERS, INC.

- The City of Portsmouth should request the opportunity to review and comment on the proposed additional monitoring program in conjunction with the recent data.
- As additional data is collected and evaluated, delay of the remediation may be an unintended consequence. The Portsmouth Water System should be very concerned that for each day, month, or year that a remedial solution is not in place, the risk to one of the most important regional drinking water sources increases.
- There may be a tendency to delay implementation, reassess the remedial technology, or not consider alternative more flexible technologies, during the period when new information and monitoring data is being collected. We do not believe that the need to further characterize the geology south of the Landfill and the southern plume should cause any delay in moving forward with the pre-design and design of Alternative Remedy (SC-A + MM-2/4) at this time.
- However, based on the concerns raised above regarding the air sparging trench technology, we feel the 1991 ROD remedy should continue to be updated to facilitate timely implementation as a contingency alternative.

If you have any questions regarding our comments please feel free to call George Naslas or me at (603) 431-3937. Thank you for this opportunity.



"Peschel, Dean"
<dean.peschel@ci.dover.nh.us>

08/11/2004 12:23 PM

To: Darryl Luce/R1/USEPA/US@EPA
cc:
Subject: comments on EPA Proposed Closure Plan and Addendum for Tolend Landfill

Hi Darryl,

Attached are the comments from the Dover PRP Group to the EPA Proposed Closure Plan and Addendum for Tolend Landfill. I will send a hard copy by mail as well.
Thanks. Look forward to begin working on the project again.

Dean Peschel

Environmental Projects Manager

288 Central Avenue

Dover, NH 03820-4169

t: 603.516.6094 f: 603.516.6463 <mailto:dean.peschel@ci.dover.nh.us> <http://www.ci.dover.nh.us>



Dover: First in New Hampshire, First with you! PRP comments to proposed plan.doc



"Peschel, Dean"
<dean.peschel@ci.dover.nh.us>

08/18/2004 10:25 AM

To: Darryl Luce/R1/USEPA/US@EPA
cc: "Andrew Hoffman (ahoffman@des.state.nh.us)"
<ahoffman@des.state.nh.us>
Subject: final-md

Hi Darryl,

I sent you comments from the group that were not the final version. One of our consultants pointed this out to me this morning. I inadvertantly sent the next to last version as our comments. I have attached the final version that I should have sent to you. My apologies for this error.

Dean Peschel

Environmental Projects Manager

288 Central Avenue

Dover, NH 03820-4169

t: 603.516.6094 f: 603.516.6463 <mailto:dean.peschel@ci.dover.nh.us> <http://www.ci.dover.nh.us>



Dover: First in New Hampshire, First with you! final-md.doc

**COMMENTS ON THE PROPOSED PLAN FOR
REMEDIATION OF THE DOVER MUNICIPAL LANDFILL SUPERFUND SITE
DOVER, NEW HAMPSHIRE**

INTRODUCTION

The Executive Committee of the Group of Work Settling Defendants (the Group)¹ for the Dover Municipal Landfill Superfund Site (the Site) appreciates the consideration by the U.S. Environmental Protection Agency (USEPA) and New Hampshire Department of Environmental Services (NHDES) of the Revised Focus Feasibility Study (RFFS) and the Proposed Plan for an amended Record of Decision (ROD) for the Site. The remedy described in the Proposed Plan is clearly protective of human health and the environment, which the Group agrees is a necessary predicate to proceeding with the amendment of the ROD. Moreover, the Proposed Plan will provide a more permanent and efficient remedy for Site conditions than the remedy called for by the 1991 ROD. The Proposed Plan will facilitate the *treatment* and *destruction* of contaminants of concern, rather than allowing for those contaminants to remain untreated beneath an impermeable cap for decades if not centuries.

The Proposed Plan employs an innovative application of a combination of technologies that are well-proven at the field scale. Accordingly, any design issues specific to this project can be resolved based upon analytical methods that are commonly used in the application of the technologies involved.

While fully supporting the determination by EPA and DES to amend a portion of the ROD, the Group offers these comments on the Proposed Plan in an effort to clarify certain of its elements and to suggest refinement of the approach to its implementation.

ARSENIC ISSUES

The Group believes that 'background' or natural arsenic released from the formation due to anaerobic ground water contributes substantially to the arsenic measured at the Site. In this case, ICLs will likely never be achieved upgradient of the treatment trench despite the remediation of the disposed waste. Therefore, an understanding of naturally occurring arsenic concentrations is key to setting remedial goals.

As discussed in the RFFS and USEPA's addendum, arsenic poses the majority of the risk at the Site (typically 95 percent or more, depending upon the exposure scenario considered). Analyses presented in the RFFS suggest that arsenic is likely to remain

¹ City of Dover, Davidson/Textron now Collins & Aikman, Clarostat Mfg, Wentworth Douglass Hospital, BFI now Allied Waste, Eastern Air Devices, Moore Business Forms, Melville Corp.

above Interim Cleanup Levels (ICLs) for a very long time (75 or more years, depending upon the remedial scenario considered). In light of these considerations, the Group recommends that the evaluation of background arsenic concentrations in ground water documented in the Golder Pre-Design Investigation (PDI) be expanded to address conditions in the individual strata identified at the Site. Conceptually, the Group suggests an approach that will identify monitoring wells screened in each stratum in the areas of the Southern and Eastern Plumes that are not impacted by leachate or other contaminants associated with the Landfill and analyze COC concentrations (including arsenic) and geochemical conditions in ground water samples collected from these wells to identify background arsenic concentrations. Geochemical and contaminant data obtained in conjunction with the Environmental Monitoring Program (EMP) can be used in this evaluation, along with suitable statistical techniques. If warranted, supplementary geochemical and contaminant data can be obtained during pre-design of the remedy. As mentioned in the RFFS and acknowledged in USEPA's addendum, the Group performed an initial analysis along these lines, which has not been approved by USEPA, but that may provide a suitable starting point for an augmented assessment of background arsenic concentrations in ground water, subject to review and approval by USEPA of the methodology to be employed (see TZD Technical Memorandum-Issues Summary titled "Dissolved Arsenic Background Conditions in Ground Water" dated September 11, 2001 developed and submitted to the Agencies for the September 21, 2001 TZD meeting).

EMP Sediment Monitoring

The Group does not concur with the Agencies that sediment monitoring in the Cochemo River should be part of the EMP monitoring. As reported in Section 2.0 of the RFFS, concentrations of arsenic in sediment exceeded a screening threshold concentration at which adverse effects on benthic organisms are theoretically possible. Based upon this finding and consistent with a tiered approach to evaluating potential ecological risks, the Proposed Plan requires testing of the bioavailability of the arsenic in Cochemo River sediment to confirm whether adverse impacts on benthic organisms are, in fact, occurring. In addition, however, the Proposed Plan seems to require continued monitoring of sediment quality over the duration of the remedy. The Group recommends that the second tier testing approach be followed, if warranted by field data, in conjunction with the five-year reviews of remedy performance.

SOUTHERN PLUME REMEDY

The Proposed Plan, as described in the RFFS Addendum, employs a pump and treat remedy for the Southern Plume. The Group is dedicated to protecting the water supply in the Bellamy Reservoir. At this time, however, the incomplete characterization of the Southern Plume severely limits the ability to analyze the remedy selected for this portion of the Site. Augmentation of the monitoring network in this area is warranted to better define the boundaries of the Southern Plume. Also, analyses are required to confirm proposed ground water extraction rates for this area and to assess the potential

effectiveness of extracting ground water in terms of capturing ground water flow and influencing COC distribution and migration.

The Group offers several clarifications to Table 1 in Appendix B of the RFFS Addendum (Table 1 of the RFFS Addendum was a summary of the results of statistical analyses of historical ground water quality data for wells located within the Southern Plume). Based upon the ground water flow divide between the Southern and Eastern Plumes (see, for example, Figure 1-2 and Table 1-11 of the RFFS), wells SB-C2, SC-8US, SC-8UUI, SC-8LUI, SC-9US, and MW-101U are not located in the Southern Plume. Therefore, these wells were removed from the table. The concentrations of benzene at wells SB-B1 and SC-11US have never been above the ICL; therefore, these data should have been shaded in blue, consistent with USEPA's color key. In addition, Table 1 in Appendix B of the RFFS Addendum used November 2001 data for arsenic, VC and THF at well SB-4D; these numbers were revised to reflect the May 2002 data, which was used for the rest of the table. Also, VC was not detected at well SC-11US in May 2002, and therefore, that datum was changed to 0. Table 1R below incorporates these corrections. As revised, Table 1R underscores the need for additional information regarding conditions in the Southern Plume to facilitate remedy decision making.

Table 1R
Southern Plume

red= increasing trend, yellow = no trend, green = decreasing trend, blue = always below ICLs

| Contaminated
Ground water
Location | Well | Screened
Interval
(bgs, feet) | Strata
Location | concentration (ug/L) in May '02 | | | |
|--|----------|-------------------------------------|--------------------|---------------------------------|-----|-----|------|
| | | | | As | VC | Ben | THF |
| Landfill Wells | SC12US | 34 to 39 | US | 162 | 0.9 | 31 | 690 |
| | SC12UUI | 44 to 49 | UUI | 198 | | | 1400 |
| Landfill Toe
Wells | SC-11US | 4.5 to 4.9 | US | | | | |
| | SC18US | 14 to 19 | US | 53 | | | |
| | SC10US | 5 to 20 | US | | | | |
| | SC-11UUI | 16 to 21 | UUI | | | | |
| | SC18UUI | 24 to 29 | UUI | 66 | | | |
| | SC10UUI | 24 to 29 | UUI | 43 | | | |
| | SB4D | 34 to 44 | UUI | | | 30 | |
| | SC10LUI | 43 to 48 | LUI | | | | 37 |
| Southern
Plume Wells | B8WT | 1 to 10.5 | US | | 6 | 4 | 250 |
| | SB-B1 | 5 to 15 | US | | | | |
| | SB-B2 | 34 to 44 | UUI | | | | |

Source: RFFS, April 30, 2003.

Another factor that apparently has influenced the Agencies proposal for a pump and treat remedy for the Southern Plume is a misunderstanding of the potential degradation pathways for several of the key contaminants of concern:

1. Vinyl chloride (VC) degradation under anaerobic conditions is very well documented in the scientific literature (see literature references and pathway in Figure 1-7 in the RFFS), and is a common pathway in the subsurface at the Site as evidenced by the coincidence of vinyl chloride and ethene. Ethene is the anaerobic daughter product of vinyl chloride degradation and as illustrated in the tables in Appendix G of the RFFS, ethene was detected at all locations where significant concentrations of vinyl chloride were measured. This anaerobic pathway for degradation of vinyl chloride at the Site was also confirmed in microcosm studies cited in the RFFS (Envirogen, 1995).
2. Benzene also degrades under anaerobic conditions in subsurface aquifers (Grbić-Galić and T.M. Vogel, 1987; Edwards and Grbić-Galić, 1992; Lovley et al., 1995; Harwood and Gibson, 1997; Weiner and Lovley, 1998; Rooney-Varga et al., 1999; Burland and Edwards, 1999; Anderson and Lovley, 2000). However, the daughter products of anaerobic benzene degradation are not as distinct as that of vinyl chloride and cannot be distinguished from other components of landfill leachate.
3. Tetrahydrofuran is also known to degrade anaerobically (discussion and citations in Section 4.3 of the RFFS), and the anaerobic sequestration of arsenic is also well documented in the scientific literature (as discussed with citations in Section 4.5.1 of the RFFS).

Therefore, the scientific literature supports the RFFS conclusion that there are attenuation mechanisms for these contaminants of concern under the anaerobic conditions encountered in the Eastern and Southern Plumes. However, the rate at which degradation is occurring in these plumes needs to be investigated. The planned investigation of natural attenuation is discussed below.

The Group recommends that the Agencies retain the flexibility to analyze the potential utility of monitored natural attenuation (MNA) for the Southern Plume based upon the results of pre-design characterization and analyses. A MNA remedy allows for the retention of a pump and treat remedy as a contingent measure.

An outline of a Southern Plume Characterization Workplan submitted by the Group was revised to address comments received in a January 13, 2004 letter from Mr. Darryl Luce of USEPA. The Group recommends that the general approach outlined in this workplan be used as a basis for identifying pre-design activities and methods. In addition, the first draft of the Southern Plume Characterization Workplan submitted to the Agencies incorporated a plan for assessing MNA concurrently with the assessment of the lateral extent, depth and mass of the contaminated ground water in the Southern Plume. In his comments, Mr. Luce requested that the Group submit a separate workplan

for the MNA investigation. In accordance with Mr. Luce's comments, this workplan will be prepared based upon comments provided and references cited in Appendix G of the RFFS.

If pre-design investigations indicate that a pump and treat remedy is warranted for remediation in the Southern Plume, the Group recommends that the Agencies retain flexibility in the design process to allow value engineering analyses of the most efficient combination of remedial approaches and technologies for ground water extracted from the Southern Plume, and, possibly, from within the western-most lobe of the Landfill to address a possible THF hotspot. For example, one of the variations on the proposed remedy that the Group would like to investigate during pre-design would be to deliver the water pumped from the Southern Plume, combine it with the ground water extracted in the southwest corner of the Landfill and pipe this ground water to the City of Dover publicly-owned treatment works (POTW).

MODELING ISSUES

One of the assertions in the RFFS Addendum was that the modeling completed for the RFFS was inaccurate because contaminants measured at SB-B2 in the Southern Plume since 1993 were not predicted by the model. This misunderstanding has led the Agencies to predict impact on the Bellamy by Site COCs not predicted by the modeling. This section will clarify this issue for the Agencies so that the model can be used to reasonably compare alternatives and aid in the remedy design.

The Group acknowledges that USEPA and NHDES elected to defer resolution of certain issues involving modeling of ground water flow and contaminant fate and transport in the final draft of the RFFS, and that resolution of these issues and acceptance of the model by the agencies will be a key aspect of remedial design. Nevertheless, the model simulations presented in the RFFS provided a suitable initial approximation of Site conditions for comparison of remedial alternatives at a feasibility study level. In this context, the Group offers comments regarding certain model-related issues raised in the RFFS Addendum that it believes are important in consideration of the Proposed Plan at this stage in the Superfund remedial process.

Hydraulic modeling completed during the RFFS (and described in detail in Appendix N of the RFFS) included particle track evaluations to identify expected ground water flow paths and to estimate travel times for ground water in the area of the Southern Plume. The RFFS Addendum concluded that contaminant migration in the area of the Southern Plume is much faster than simulated, or that contaminants were released within the Landfill well before 1979 (Page 13, Section 2.0 of the RFFS Addendum). This conclusion was reportedly based upon review of historical ground water quality data associated with well SB-B2 and Figure H-15 of the RFFS (Attachment H of Appendix N; a model-simulated particle track that originated from the southern tip of the western lobe of the Landfill, designated particle track "D"). In plan view, particle track "D" traverses the general vicinity of well SB-B2. In cross section, particle track "D" travels within the

lower portion of model layer 3, which is monitored by the screened interval for well SB-B2 (34 to 44 feet below ground surface).

The distance from the southwestern toe of the Landfill to the Bellamy Reservoir is approximately 1,500 feet. Well SB-B2 is located approximately 550 feet from the southwestern toe of the Landfill (approximately one-third of the distance from the Landfill to the reservoir). Particle tracking results indicated that the time for Particle D to travel from the Landfill to the Bellamy Reservoir was 54 years (Table 4-3, Appendix N of the RFFS). Therefore, the approximate ground water travel time from the toe of the Landfill to the zone monitored by well SB-B2 is 18 years (i.e., one-third of 54 years).

Volatile organic compounds (VOCs) were detected in ground water samples obtained from well SB-B2 as early as 1993 (i.e., the start of the EMP). Based upon the information obtained from the particle track evaluation, VOCs detected in well SB-B2 in 1993 would have required approximately 18 years to migrate from the Landfill, assuming unretarded migration at the rate of ground water flow, indicating a release in approximately 1975, which was during the Landfill's operating period from 1960 until 1979. It is important to note that the particle track simulations provided an estimate of the approximate travel times associated with advective ground water movement alone. In geologic settings similar to those observed at the Landfill, the migration of VOCs is slowed (i.e., retarded) by physical processes in the subsurface, such as adsorption. To evaluate possible transport times associated with individual dissolved VOCs in ground water, a retardation factor was applied to the particle track estimates. VOCs detected in ground water samples from well SB-B2 at concentrations above ICLs during historical EMP events (1993 through 2002) have included benzene (6 to 33 micrograms per liter ($\mu\text{g/L}$)), vinyl chloride (<1 to 4 $\mu\text{g/L}$), and tetrahydrofuran (240 to 2,400 $\mu\text{g/L}$).

The compounds with the highest and lowest partitioning coefficients (K_d) were selected to estimate retarded travel times from the Landfill to well SB-B2 (benzene - K_d of 0.059 cm^3/g , and vinyl chloride - K_d of 0.019 cm^3/g). Retardation factors of 1.39 and 1.13 were calculated for benzene and vinyl chloride, respectively, using parameters consistent with those applied during the RFFS modeling effort (Table 10A of Appendix N of the RFFS). Based upon these retardation factors, estimated travel times for benzene and vinyl chloride to reach SB-B2 from the Landfill are 25 and 20 years, respectively.

As previously indicated, the Landfill was active from 1960 through 1979. Therefore the maximum time for contaminant migration to the first detection at SB-B2 is approximately 33 years (1960 to 1993). The estimated travel time for benzene from the toe of the Landfill to well SB-B2 (25 years) is less than the maximum possible travel time of 33 years, indicating that the release of benzene to ground water within the Landfill could have occurred as early as 1968. Similarly, the estimated travel time for vinyl chloride from the toe of the Landfill to SB-B2 is 20 years. Therefore, the generation of vinyl chloride by the anaerobic reductive dechlorination of TCE and PCE within the Landfill could have occurred as early as 1973. Based upon these estimates of travel time, simulated VOC migration in the Southern Plume (assuming advective flow and retardation) is reasonably consistent with VOC detections at well SB-B2.

Figure 1 presents a timeline of the operational history of the Landfill and the estimated ranges of travel times for ground water and representative VOCs in the Southern Plume in the vicinity of well SB- B2.

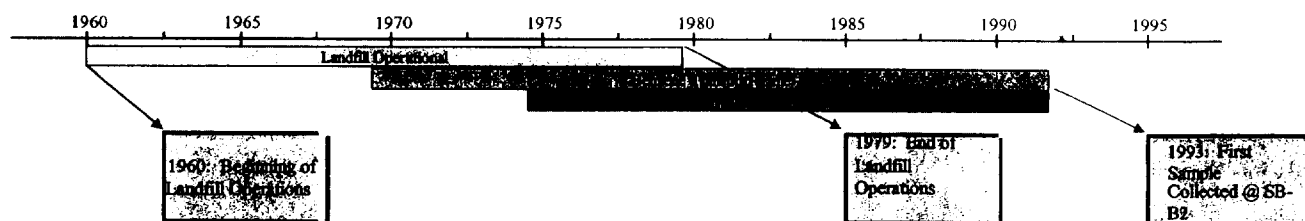


FIGURE 1: Landfill Operation and Contaminant Transport Timeline for Benzene and Vinyl Chloride.

The RFFS Addendum concluded that, under the Alternative Remedy management of migration scenario (i.e., monitored natural attenuation), vinyl chloride, benzene, and tetrahydrofuran will eventually be discharged to the Bellamy Reservoir (page 54, Section 5.5). As acknowledged in a preceding paragraph in the RFFS Addendum, analyses completed during the RFFS do not support this conclusion.

Simulated ground water elevations in the Southern Plume correlated exceptionally well to the average observed ground water elevations (i.e., the model calibration data set). The average difference between observed and modeled average ground water elevations for the portion of the model occupied by the Southern Plume and area to the west and southwest of the Landfill was approximately 0.7 feet (8 inches; based upon data included in Table 3 of the Appendix N of the RFFS). These data indicate that the model provided a very close approximation of hydraulic conditions between the Landfill and the Bellamy Reservoir.

During the RFFS, the model was used to evaluate possible transport of VOCs in the Southern Plume after source control remedial measures were implemented. These simulations assumed that additional VOCs would not migrate past the toe of the Landfill after the source control measures became operational. Recent EMP monitoring results were used to develop VOC contour maps to represent the current shape and concentration distribution of VOCs within the Southern Plume (Attachment J of Appendix N). These "plume maps" were input to the model and simulations were completed to evaluate plume migration over time. Within the Southern Plume, the simulations were focused upon evaluating whether VOCs would travel to and eventually discharge to the Bellamy

Reservoir.

Tables 12a through 12e in Appendix N of the RFFS summarize the results of fate and transport modeling associated with the Southern Plume. These results are shown in plan view in Attachment L of Appendix N of the RFFS.

Tables 12b through 12e present the fate and transport simulations for benzene, tetrahydrofuran, cis-1,2-dichloroethylene, and vinyl chloride. For each of the four organic COCs, a management of migration simulation was conducted for the Alternative Remedy using a minimum literature degradation rate. In all instances, there were no simulated impacts to the Bellamy Reservoir within the 100 year modeled timeframe (i.e., the simulated plumes attenuated to below MCLs before they reached the north banks of the Bellamy Reservoir).

DIPERSION

The RFFS Addendum included representations that dispersivity at the Site is low. Based upon this assumption, the agencies have made conclusions regarding the expected configuration and geometry of contaminant "plumes," and, in particular, they have conceptualized leachate conditions at the Site to consist of narrow concentrated plumes. As discussed in the RFFS, the fluoride tracer test completed during the TZD was not adequate to provide reliable estimates of Site-specific values of dispersivity. In addition, the Group is not aware of other evaluations or investigations that have been completed for the Site that established or estimated a Site-specific value of dispersivity. The agencies justification for selecting a low dispersivity value for independent evaluations completed for the Site was not included in the RFFS Addendum and was not previously provided in correspondence associated with the TZD Project. There are potentially wide-ranging implications to a conclusion that dispersivity at the Site is low that can affect a number of aspects of remedial design and establishment of practical ground water monitoring networks.

Consideration of dispersion is expected to be a component of technical evaluations completed during remedial design activities, including monitoring requirements, hydraulic considerations, and trench design and configuration. Values of dispersivity for fate and transport/hydraulic evaluations and remedial design are almost always derived from published literature for highly detailed research tests. This approach (i.e., relying upon literature values) was used to complete the fate and transport modeling during the RFFS as is consistent with the approach used at most other Superfund Sites. The Group recommends that further evaluation of dispersion be included in subsequent pre-design activities and that representative values for the Site be evaluated, discussed, and selected prior to the completion of remedial design.

SC-A: EXISTING LANDFILL COVER AND TRENCH TREATMENT SYSTEM

Based upon the Group's review of the RFFS Addendum, it offers several clarifications and recommendations regarding the Proposed Plan for a source remedy. Specifically, the Group's comments on the localized source identification approach, trench configuration; the contingent remedy; excavated soils disposition; and constructability and implementability issues identified by USEPA and NHDES. Also, the Group notes that page 45 of the Addendum states that "[a] ground water diversion trench would also be installed upgradient of the landfill;" however, this element was not part of SC-A as described in the RFFS, although it was a component of the 1991 ROD remedy.

Localized Source Identification Approach

The Group concurs with the Proposed Plan's intent to identify localized sources of contaminants at the northwest corner of the Landfill in the vicinity of surface water station SW-E and at the southwestern lobe of the Landfill where a localized area of relatively elevated THF concentrations has been identified. The RFFS addendum identifies soil gas surveys and test pit investigations as the methods to be used to accomplish these investigations; however, the Group recommends that the agencies defer decisions regarding the specific methods to be used for these investigations until the pre-design stage of the remedial action, allowing consideration of the use of other techniques such as geoprobe sampling and field gas chromatography investigations of shallow ground water.

Constructability and Implementability

In several sections within the RFFS Addendum and during the public meetings on June 21st and July 19th, 2004, concerns were raised regarding the constructability and implementability of the treatment trench. With respect to the constructability of the proposed treatment trench, the Group recommends that the Agencies refer concerned individuals to Appendix L-1 of the RFFS, which contains information on the viability of deep trench construction that was developed based on direct communications with qualified trench construction contractors regarding specific conditions at the Dover Landfill Site. Further, the Agencies may wish to refer to the experiences with successful construction of remedial trenches to depths of approximately 80 feet and 110 feet for the Cardinal Landfill and Savage Well Superfund sites, respectively. In addition, the Somersworth Landfill PRB trench was constructed using the same technology being proposed for Dover Landfill; that trench is 915 feet long and 47 feet in depth.

With respect to implementability, the concerns raised are focused on the ability of the trench to treat the COCs and on the potential of an unacceptable reduction in hydraulic conductivity (termed "clogging" in the Addendum) of the trench media as a result of both mineral precipitation and biomass growth. In completing the RFFS, considerable research was performed on these issues and relevant literature on similar operating systems is presented in Appendix L-2 of the RFFS. In addition, calculations

were performed to evaluate potentially unacceptable reductions in hydraulic conductivity of the trench media (Appendices K-1 through K-4 of the RFFS). A comprehensive analysis of treatment effectiveness was performed using both literature references and calculations based upon experience at other sites (Appendix J of the RFFS on stripping of VOCs and Appendix K-5 of the RFFS on arsenic immobilization). The Group recommends that the Agencies refer individuals to the referenced appendices when considering issues regarding treatment trench implementability.

Trench Configuration

The Group does not concur with the Agencies on the placement of the treatment wall (a.k.a. treatment trench) pictured in Figure 4 of the RFFS Addendum. If the Group will be required to construct a treatment trench at the Landfill toe, then the Group should have flexibility in the RD/RA to optimize the system design. For instance, the Landfill includes an Eastern Lobe and Western Lobe that have different historical use and associated ground water impacts. The Eastern Lobe is the oldest portion of the Landfill, was created during a period when burning of waste material was the primary disposal method, and is located in an area where ground water flow velocities are higher. The Western Lobe is the youngest portion of the Landfill, was created during a period when burning was not predominantly practiced, and is in an area where ground water flow velocities are slower. Because of the differences in conditions associated with these two lobes of the Landfill, these areas can be considered two distinct "solid waste units." Examples of the design optimization may include the use of sheet pile barriers along flow paths that are predominantly parallel to ground water flow (e.g. between monitor wells SC-9 and SC-8), effectively separating the two solid waste units. Not only would this serve to optimize the trench design, performance characteristics and system cost, but also would result in a movement of the ground water divide towards the west with an associated reduction in impacted ground water flow towards the Bellamy Reservoir.

Another option for the source control component of the remedy is construction of the trench along Tolend Road; essentially moving the point of compliance from the toe of the Landfill to the property boundary at Tolend Road. This is an option that has merit for several reasons: 1) It would allay the fears expressed by the public that contaminants that are already past the toe of the Landfill pose a threat to the Cocheco River. The Cocheco is a more valuable resource than the limited use aquifer that lies between the toe of the Landfill and Tolend Road; 2) This area between the Landfill toe and Tolend Road is owned by the City, there is no potential for development, and even if development were desired, the aquifer yield cannot sustain residential wells; 3) From a regulatory standpoint, the point of compliance can be moved to the property line because contaminant mass exists outside the limits of the Landfill, essentially constituting waste management units that are separate from the Landfill; and 4) A conservation easement could be put in place between the toe of the Landfill and the trench at Tolend Road. Instead of the trench at the toe of the Landfill, this option for the source control remedy would require that the Landfill be maintained with the current vegetated permeable cap to allow flushing of the contaminants downgradient to the trench. With this option, any contaminants that might be threatening the Bellamy in the Southern Plume could be

pumped and treated by delivery to injection galleries upgradient of the treatment trench at Tolend Road.

The Group concurs with the Agencies (Appendix C of the RFFS Addendum) that the ground water flow and fate and transport model is an important tool for remedy design and that relevant data collected during the PDI will be used to support final model development.

Excavated Soil Disposition

The RFFS Addendum appears to assume that approximately 19,000 cubic yards of soil excavated from the Site to construct the treatment trench will be removed from the Site (e.g., page 45, 2nd full paragraph). To mitigate potential short-term impacts associated with construction of the remedy (i.e., vehicle traffic on local roads), and to avoid large and unnecessary disposal costs of approximately \$1.2 MM (essentially paying another landfill for its daily cover), the Group recommends that soil excavated during construction of the treatment trench be managed consistent with the provisions of the NHDES Risk Characterization and Management Policy and the contaminated soil reuse provisions of the State's Solid Waste Rules (Env-Wm 2603.05). The RCMP establishes cleanup guidelines for soil that consider both potential risk resulting from direct exposure and potential impacts on ground water quality (Section 7.5, RCMP, NHDES, January 1998, as revised). The pertinent sections of the Solid Waste Rules govern reuse of contaminated soil. Under the provisions of the RCMP and these rules, it most probably will be practicable to place the excavated soil on top of the Landfill to provide additional permeable cover.

Contingent Remedy

The Agencies recommend on page 35 of the Addendum that "If air sparging, THF degradation, or arsenic capture fails, or clean closure cannot be achieved at the Landfill, the contingent remedy will be the 1991 ROD remedy". The Group recognizes and concurs with the requirement for a contingent remedy but would recommend that the agencies reconsider the content of the contingent remedy. Both the Group, in the RFFS (Section 5.8), and the Agencies, in the Addendum (Section 5.3), recognize the potential benefits to maintaining the current cover on the Landfill during the active source remedy phase of the project, in particular with respect to expected COC clean-up timeframe and remedy cost. At other landfills, the installation of a RCRA cap has not significantly decreased the amount of leachate generation, and has the added detrimental effect of increasing the amount of time for complete elimination of the contamination by entombing the waste and decreasing the flushing which serves to deliver the contaminants to the treatment system. It is further recognized that the Agencies uncertainties with respect to the proposed remedy exist within the performance of the treatment trench. Based on these recognized benefits and these uncertainties, the Group proposed in the RFFS and the Agencies reiterated in the Addendum (page 34), that the design of the trench would incorporate the flexibility to convert the trench to a leachate collection system. Conversion of the trench to a leachate collection system, without the

addition of a landfill RCRA-C cap, would preserve the treatment features of the remedy as contrasted with containment, and would serve to maintain the advantages of COC treatment time and remedy cost while providing an appropriate contingent remedy for the proposed trench performance.

The Group has informed the USEPA and NHDES that it is investigating reuse of the Landfill as a disposal facility for dredge spoils, lightly contaminated soil or possibly municipal solid waste. The reuse approach would be generally consistent with the 1991 ROD remedy as currently designed. Conceptually, the portion of the Landfill surface that is not reused would be covered with a cap consisting of sub-grade layer, overlain by a gas venting layer, overlain by a low permeability cap layer, overlain by a drainage layer, overlain by a protective layer and a vegetative support layer. The new landfill cell would include a liner system composed of a sub-grade layer, overlain by a low permeability soil liner layer or geocomposite clay layer, a secondary flexible membrane liner and a drainage layer, overlain by the primary flexible membrane liner and drainage layer. These systems would prevent infiltration through the waste mass of the existing Landfill. A downgradient collection system would capture leachate and impacted ground water migrating from beneath the Landfill for off-site treatment at the City of Dover POTW. Importantly, the reuse concept would generate funds for the City to offset the considerable costs of remediation, substantially mitigating the potentially large adverse impact on City finances.

The City has met with NHDES to identify threshold issues to be addressed in pursuing the reuse concept. NHDES issued a letter dated January 12, 2004 in which it identified the key issues to be addressed. The City responded to this letter by identifying its approach to addressing these issues by letter on June 11, 2004, and at this juncture, is seeking a meeting with USEPA to discuss the reuse concept at the Site. The City is available to meet with USEPA at the earliest opportunity so that this concept can be appropriately considered in the ROD amendment process.

REFERENCES CITED

- Anderson, R.T. and D.R. Lovley. 2000. Anaerobic bioremediation of benzene under sulfate-reducing conditions in a petroleum-contaminated aquifer. *Environ. Sci. Technol.* 34: 2261-2266.
- Burland, S.M. and E.A. Edwards. 1999. Anaerobic benzene biodegradation linked to nitrate reduction. *Appl. Environ. Microbiol.* 65: 529-533.
- Edwards, E.A. and D. Grbić-Galić. 1992. Complete mineralization of benzene by aquifer microorganisms under strictly anaerobic conditions. *Appl. Environ. Microbiol.* 58: 2663-2666.
- Grbić-Galić, D. and T.M. Vogel. 1987. Transformation of toluene and benzene by mixed methanogenic cultures. *Appl. Environ. Microbiol.* 53: 254-260.

Harwood, C.S. and J. Gibson. 1997. Shedding light on anaerobic benzene ring degradation: a process unique to prokaryotes? A Minireview. *J. Bacteriol.* 179: 301-309.

Lovley, D.R., J.D. Coates, J.C. Woodward, and E.J.P. Phillips. 1995. Benzene oxidation coupled to sulfate reduction. *Appl. Environ. Microbiol.* 61: 953-958.

Rooney-Varga, J.N., R.T. Anderson, J.L. Fraga, D. Ringelberg and D.R. Lovley. 1999. Microbial communities associated with anaerobic benzene degradation in a petroleum-contaminated aquifer. *Appl. Environ. Microbiol.* 65: 3056-3063.

Weiner, J.M. and D.R. Lovley. 1998. Anaerobic benzene degradation in petroleum-contaminated aquifer sediments after inoculation with a benzene-oxidizing enrichment. *Appl. Environ. Microbiol.* 64: 775-778.